

Estimate No: 94336
 CER No. : KIF93-1218-PO
 PCN : KIF009

TENNESSEE VALLEY AUTHORITY
FOSSIL & HYDRO POWER
COST ESTIMATE/SCOPE OF WORK

C09 940907 001

TO : Those listed
 FROM: Ronald W. Clevenger, Manager of Estimating, Fossil & Hydro Engineering
 LP 2L-C

Project: Kingston Fossil Plant

Feature: Coal Yard Runoff Pond

Requesting Organization: Project Management (D. A. Howard)

Purpose: For Phase II approval

Description of Work to be Performed: Estimate the cost to replace the existing coal yard runoff pond pumps, piping and remove the existing pumphouse and platform. Three alternate pump and pipeline configurations were estimated: Alternate 1 - One pump and one discharge pipeline to ash pond; Alternate 2 - two pumps and one discharge pipeline to ash pond; Alternate 3 - Two pumps and two discharge pipelines to ash pond. No Phase I cost is included in estimate.

Phase:	Study I	Design & Long-Lead Procurement II	Implementation III	Total
Total Direct Cost:				
Alternate 1	<u>\$NA</u>	<u>\$170,580</u>	<u>\$319,420</u>	<u>\$490,000</u>
Alternate 2	<u>\$NA</u>	<u>\$247,580</u>	<u>\$366,420</u>	<u>\$614,000</u>
Alternate 3	<u>\$NA</u>	<u>\$266,580</u>	<u>\$416,420</u>	<u>\$683,000 * 710</u>

Type of Estimate : NA Detail Preliminary

Schedule:
 Start : 04/04/94 10/03/94 FY 95
 Complete: 08/26/94 12/30/94 FY 95

Comments: Project Team Implemented? Yes No

Reference the following attachments:

- Attachment 1 - Cost Estimate
- Attachment 2 - Scope of Work
- Attachment 3 - Bill of Material
- Attachment 4 - Cash Flow

- K. W. Burnett, LP 2G-C
- R. M. Cole, KIF
- J. R. Dunn, K1F 1A-K
- W. D. Hall, BR 4A-C
- D. A. Howard, BR 3D-C
- A. G. Mock, SMW 1B-K (with diskette)
- D. W. Scott, LP 2G-C
- RIMS, CST 13B-C

Lab
 Submitted by Larry Berber
 For RWC

FOSSIL ENGRG Receiver			
SEP 12 '94			
Referred	IF	INFO	Date
RGJ		✓	12
RAB			
RWB		✓	9/14 LAST
RCC			
VWD		✓	9/12
RWJ			
LAN			
LFN		✓	9/13
WLP			
			9-7-94
EBR			(Date)
PHF			

Issue Date: SEP 07 1994

94336.(file 94336A1)

TVA - FHP FHE ESTIMATING

Phase II Approval

rept:np95

KINGSTON FOSSIL PLANT**COAL YARD RUNOFF POND****.ALT 1-ONE PUMPS & ONE PIPELINE.**

31-Aug-94

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EXECUTIVE SUMMARY

Location	Material \$\$	T & L Man-Hours	Labor \$\$	Eqpt/Othr \$\$	Subcontr \$\$	Total Cost
A REMOVALS		696	11,963			11,963
COAL YARD SUMP	15,560	1,089	19,316			34,876
DX PUMPING ASSY	105,614	296	6,756			112,370
EARTHFILL	2,235	87	1,728	19		3,982
PIPE TO ASHPOND	22,768	1,710	36,363	8,812		67,943
STNLS STL PIPE	23,173	237	5,687			28,860
z0 ELECTRICAL	1,573	144	3,432	12		5,017
z1 HEAVY EQUIP				35,070		35,070
z1 TAGGED EQUIP				4,340		4,340
Construction Facilities		997	16,318	13,165	244	29,727
TOTAL DIRECT COST	170,921	5,252	101,558	61,417	244	334,140
Non-Manual Labor	(Phase 2 = 6,000 + Phase 3 = 23,960)					29,960
Total Contingency	(Phase 2 = 6,000 + Phase 3 = 21,069)					27,069
Partner Expnse/Charges(84E)	(Fee = 9,470 + Ins = 9,470)					18,940
TOTAL CONSTRUCTION						410,109
:: LESS Engineered Materials - (Phase 2 = 125,000 + 6,000 contingency)					>	131,000 <
TOTAL CONTRACT CONSTRUCTION						279,109
F&H Engineering						23,250
Plant Overhead Charges for Procurement & Handling of Capital Materials						12,000
Project Manager's Contingency						44,641
== TOTAL (PAB APPROVAL) COST ==						490,000

**KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND
.ALT 2-TWO PUMPS & ONE PIPELINE.**

Location	Material \$\$	T & L Man-Hours	Labor \$\$	Eqpt/Othr \$\$	Subcontr \$\$	Total Cost
A REMOVALS		696	11,963			11,963
COAL YARD SUMP	15,560	1,089	19,316			34,876
DX PUMPING ASSY	178,118	344	7,874			185,992
EARTHFILL	2,235	87	1,728	19		3,982
PIPE TO ASHPOND	22,764	1,710	36,363	8,812		67,939
STNLS STL PIPE	46,346	473	11,375			57,721
z0 ELECTRICAL	1,573	144	3,432	12		5,017
z1 HEAVY EQUIP				35,070		35,070
z1 TAGGED EQUIP				4,340		4,340
Construction Facilities		997	16,318	13,148	244	29,710
TOTAL DIRECT COST	266,594	5,537	108,363	61,400	244	436,600
Non-Manual Labor	(Phase 2 = 6,000 + Phase 3 = 25,300)					31,300
Total Contingency	(Phase 2 = 10,500 + Phase 3 = 24,000)					34,500
Partner Expnse/Charges(84E)	(Fee = 10,200 + Ins = 10,200)					20,400
TOTAL CONSTRUCTION						522,800
:: LESS Engineered Materials - (Phase 2 = 197,500 + 10,500 contingency)						> 208,000 <
TOTAL CONTRACT CONSTRUCTION						314,800
F&H Engineering						23,250
Plant Overhead Charges for Procurement & Handling of Capital Materials						12,000
Project Manager's Contingency						55,950
== TOTAL (PAB APPROVAL) COST ==						614,000

KINGSTON FOSSIL PLANT**COAL YARD RUNOFF POND****.ALT 3-TWO PUMPS & TWO PIPELINE.**

31-Aug-94

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EXECUTIVE SUMMARY

Location	Material \$\$	T & L Man-Hours	Labor \$\$	Eqpt/Othr \$\$	Subcontr \$\$	Total Cost
A REMOVALS		696	11,963			11,963
COAL YARD SUMP	15,560	1,089	19,316			34,876
DX PUMPING ASSY	178,118	344	7,874			185,992
EARTHFILL	2,235	87	1,728	19		3,982
STNLS STL PIPE	46,346	473	11,375			57,721
SUMP - ASH POND	41,564	2,915	64,535	8,812		114,911
z0 ELECTRICAL	1,573	144	3,432	12		5,017
z1 HEAVY EQUIP				35,070		35,070
z1 TAGGED EQUIP				4,340		4,340
Construction Facilities		997	16,318	14,975	244	31,537
TOTAL DIRECT COST	285,394	6,743	136,536	63,226	244	485,400
Non-Manual Labor	(Phase 2 = 6,000 + Phase 3 = 30,900)					36,900
Total Contingency	(Phase 2 = 10,700 + Phase 3 = 27,000)					37,700
Partner Expnse/Charges(84E)	(Fee = 13,000 + Ins = 13,000)					26,000
TOTAL CONSTRUCTION						586,000
:: LESS Engineered Materials - (Phase 2 = 216,300 + 10,700 contingency)						> . 227,000 <
TOTAL CONTRACT CONSTRUCTION						359,000
F&H Engineering						23,250
Plant Overhead Charges for Procurement & Handling of Capital Materials						12,000
Project Manager's Contingency						61,750
== TOTAL (PAB APPROVAL) COST ==						683,000

31-Aug-94
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ATTACHMENT 1

**KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND
.ALT 1 - ONE PUMPS & ONE PIPELINE.**

Quantity	Unit	Material \$\$	M-H/Unit	Man-Hours	Labor \$\$	Eqpt/Othr \$\$	Subcont \$	Unit Cost	Total Cost
1.0	ls	24.00		24	580			580.00	580
1.0	ls	144.00		144	2,561			2,561.00	2,561
1.0	ls	360.00		360	5,228			5,228.00	5,228
1.0	ls	168.00		168	3,594			3,594.00	3,594
		0		696	11,963	0	0		11,963
810.0	cy		0.32	256	4,373			5.40	4,373
470.0	cy		0.27	128	2,187			4.65	2,187
340.0	C.Y.	3,443	0.12	40	652			12.04	4,095
1,792.0	sfca	3,665	0.20	358	6,327			5.58	9,992
4.4	ton	2,160	10.67	47	1,020			722.73	3,180
60.0	cy	3,900	2.67	160	2,610			108.50	6,510
24.0	ea	24	0.75	18	394			17.42	418
10.0	lf	40	0.60	6	131			17.10	171
50.0	lf	638	0.64	32	672			26.20	1,310
6.0	ea	150	2.67	16	341			81.83	491
125.0	sf	1,500	0.19	24	515			16.12	2,015
10.0	lf	40	0.40	4	94			13.40	134
		15,560		1,089	19,316	0	0		34,876
1.0	ea	> 18,000	< 80.00	80	1,696			19,696.00	19,696
1.0	ls	> 12,109	< 144.00	144	3,362			15,471.00	15,471
1.0	ea	> 72,505	< 48.00	48	1,118			73,623.00	73,623
1.0	ea	> 3,000	< 24.00	24	580			3,580.00	3,580
		105,614		296	6,756	0	0		112,370

94336 (file 94336A1)
 TVA - FHP FHE ESTIMATING
 Phase II Approval
 rept:nl95

KINGSTON FOSSIL PLANT
 COAL YARD RUNOFF POND
 .ALT 1 - ONE PUMPS & ONE PIPELINE.

31 - Aug - 94
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 ATTACHMENT 1

Loc	Description	Quantity Unit	Material \$\$	M - H/Unit	Man - Hours	Labor \$\$	Eqpt/Otr \$\$	Subcont \$	Unit Cost	Total Cost
A REMOVALS										
	Electrical Demolition	1.0 ls	24.00		24	580			580.00	580
	Remove Pump & Piping	1.0 ls	144.00		144	2,561			2,561.00	2,561
	Remove Pump House & Slab	1.0 ls	360.00		360	5,228			5,228.00	5,228
	Remove Pump Platform & Piping	1.0 ls	168.00		168	3,594			3,594.00	3,594
	subtotal A REMOVALS		0		696	11,963	0	0	0	11,963
COAL YARD SUMP										
	Excavate for sump	810.0 cy		0.32	256	4,373			5.40	4,373
	Backfill for sump	470.0 cy		0.27	128	2,187			4.65	2,187
	Backfill 1" crushed stone	340.0 C.Y.	3,443	0.12	40	652			12.04	4,095
	Formwork for slab & walls sump	1,792.0 sfca	3,665	0.20	358	6,327			5.58	9,992
	Reinforcing place walls, #3 #7	4.4 ton	2,160	10.67	47	1,020			722.73	3,180
	Pour concrete in place 3000psi	60.0 cy	3,900	2.67	160	2,610			108.50	6,510
	Welded shear conn 3/4"x4 - 3/16"	24.0 ea	24	0.75	18	394			17.42	418
	3"x3"x5/16 steel angle A36	10.0 lf	40	0.60	6	131			17.10	171
	St stl, wf, 10" - 45's, w 14 x 26	50.0 lf	638	0.64	32	672			26.20	1,310
	Steel Plates 3/4"x1'x1' - 2"	6.0 ea	150	2.67	16	341			81.83	491
	1 - 1/2" x 3/16" Galv bar grating	125.0 sf	1,500	0.19	24	515			16.12	2,015
	4" PVC pipe sch 40	10.0 lf	40	0.40	4	94			13.40	134
	subtotal COAL YARD SUMP		15,560		1,089	19,316	0	0	0	34,876
DX PUMPING ASSY										
	:::Polypropylene Sump 10' dia x 16'h	1.0 ea	> 18,000	< 80.00	80	1,696			19,696.00	19,696
	:::36" Polypropylene Suction pipe	1.0 ls	> 12,109	< 144.00	144	3,362			15,471.00	15,471
	:::6" Vert Cant 40hp pump w/mtr	1.0 ea	> 72,505	< 48.00	48	1,118			73,623.00	73,623
	:::Level control system	1.0 ea	> 3,000	< 24.00	24	580			3,580.00	3,580
	subtotal DX PUMPING ASSY		105,614		296	6,756	0	0	0	112,370
EARTHFILL										

**KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND
ALT 1 - ONE PUMPS & ONE PIPELINE.**

Loc	Description	Quantity	Unit	Material \$\$	M-H/Unit	Man-Hours	Labor \$\$	Eqpt/Othr \$\$	Subcont \$\$	Unit Cost	Total Cost
	Earth Fill & compaction	700.0	C.Y.		0.01	9	151			0.22	151
	Crushed Stone Pmp House Area	230.0	tn	2,070	0.20	46	819			12.56	2,899
	1"GRS conduit w/fts & spts	80.0	lf	165	0.40	32	758	19		11.78	942
	subtotal EARTHFILL			2,235		87	1,728	19	0		3,982
	PIPE TO ASHPOND										
	Temporary dike @ coal yd sump	1.0	ls	160.00		160	2,454	562		3016.00	3,016
	Backfill sand around 10" pipe	620.0	cy	3,362	0.08	48	743			6.65	4,125
	Excavate for 10" pipe trench	2,050.0	cy	0.11	0.11	219	3,639			1.78	3,639
	Backfill earth for 10" trench	1,430.0	cy	0.04	0.04	64	1,065			0.74	1,065
	::10" Polyethylene Pipe SDR 19	4,200.0	ft	>	18,270	<	0.28	1,176	27,454	10.99	45,724
	::10" Polyethylene Pipe fgs 90d	2.0	ea	>	339	<	4.50	9	216	277.50	555
	::10" Polyethylene Pipe fgs 45d	5.0	ea	>	385	<	4.50	23	540	185.00	925
	::10" Polyethylene Pipe flange	1.0	ea	>	97	<	4.50	5	108	205.00	205
	Rent polyethylene fusion welder	1.0	ls					8,250		8,250.00	8,250
	::10" Polyethylene Pipe fgs WYE	1.0	ea	>	295	<	6.00	6	144	439.00	439
	subtotal PIPE TO ASHPOND			22,768		1,710	36,363	8,812	0		67,943
	STNLS STL PIPE										
	Valve box 20"x14"x16"dp,plas	1.0	ea	200	16.00	16	388			588.00	588
	Valve box 20"x14"x6"dp,plas	1.0	ea	100	8.00	8	194			294.00	294
	10" SSteel 316 flange,150# SO	1.0	ea	700	6.00	6	145			845.00	845
	6" SSteel 316 flange,150# SO	1.0	ea	235	4.00	4	96			331.00	331
	10" SSteel 316 90deg sch 40	1.0	ea	375	9.00	9	217			592.00	592
	10" SSteel 316 45deg sch 40	2.0	ea	1,760	12.00	24	578			1,169.00	2,338
	10x6" SS 316 reducer sch 40	1.0	ea	600	12.00	12	289			889.00	889
	10" SSteel 316 pipe sch 40	10.0	lf	1,420	1.00	10	233			165.30	1,653
	1" SSteel 316 pipe sch 40	10.0	lf	70	0.40	4	96			16.60	166
	10"x1" socketlet 3000# 316 ss	1.0	ea	108	4.00	4	94			202.00	202
	1" socketlet 3000# 316ss 90deg	2.0	ea	100	4.00	8	189			144.50	289
	10"x1" threadlet 3000# 316 ss	1.0	ea	90	4.00	4	94			184.00	184
	1/2"plug hex head 316 ss	1.0	ea	15	1.00	1	24			39.00	39

**KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND
ALT 1-ONE PUMPS & ONE PIPELINE.**

Loc	Description	Quantity	Unit	Material \$\$	M-H/Unit	Man-Hours	Labor \$\$	Eqpt/Othr \$\$	Subcont \$	Unit Cost	Total Cost
	12" pipe sleeves, A53 cs, coated	100.0	lf	4,800	1.00	100	2,409			72.09	7,209
	10" ss check valve 150 #, flngd	1.0	ea	6,300	24.00	24	582			6,882.00	6,882
	1" ss gate valve 150 #, threaded	1.0	ea	6,300	2.50	3	59			6,359.00	6,359
	subtotal STNLS STL PIPE			23,173		237	5,687	0	0		28,860
	Z0 ELECTRICAL										
	3/4" GRS conduit w/ftgs & spts	30.0	lf	52	0.72	22	517	7		19.20	576
	1 - 1/2" GRS conduit w/ftgs & spts	12.0	lf	35	0.80	10	230	1		22.17	266
	2" GRS conduit w/ftgs & spts	30.0	lf	116	0.50	15	359	4		15.97	479
	3/4" flexible conduit, sealite	5.0	lf	18	1.20	6	145			32.60	163
	1" flexible conduit, sealite	10.0	lf	45	0.90	9	218			26.30	263
	2" flexible conduit, sealite	5.0	lf	53	1.80	9	218			54.20	271
	#10 -3/c PXMJ 600v P & C cable	100.0	lf	79	0.04	4	87			1.66	166
	#12 -4/c PXMJ 600v P & C cable	40.0	lf	37	0.08	3	73			2.75	110
	#2/0 -s/c PXJ-600v P & C cable	120.0	lf	228	0.08	9	221			3.74	449
	Cable Terminations	62.0	ea	62	0.40	25	600			10.68	662
	Bare copper wire stranded #2	50.0	lf	39	0.30	15	363			8.04	402
	Grnd.cdwl.#2 wire mob frame	4.0	ea	40	2.00	8	196			59.00	236
	1" FD outlet box	1.0	ea	10	0.67	1	16			26.00	26
	Ground fault indicating, 15 amp	1.0	ea	40	1.00	1	24			64.00	64
	Cover plwthr proof nema 7-23	1.0	ea	19	1.00	1	24			43.00	43
	Safety hvy duty 600v 3p 60 a	1.0	ea	700	6.00	6	141			841.00	841
	subtotal Z0 ELECTRICAL			1,573		144	3,432	12	0		5,017
	Z1 HEAVY EQUIP										
	AirComp, 551-600cfm	1.0	ea					4,500		4,500.00	4,500
	Trac.Crawl.Hvy.D8, 270-300 hp	1.0	ea					5,250		5,250.00	5,250
	Compct.SheepFt.Rex 3-50	1.0	ea					4,200		4,200.00	4,200
	Bkhol.dr, 1-1/4CYx17'x18"	2.0	ea					2,700		1,350.00	2,700
	TrkDmp, 4x2, Platform	1.0	ea					3,000		3,000.00	3,000
	TrkDmp, 6x4, 12-14CY, OnRd	4.0	ea					5,400		1,350.00	5,400
	Trk, Fuel, 4x2	1.0	ea					750		750.00	750

**KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND
ALT 1 - ONE PUMPS & ONE PIPELINE.**

Loc	Description	Quantity	Unit	Material \$\$	M-H/Unit	Man-Hours	Labor \$\$	Eqpt/Othr \$\$	Subcont \$\$	Unit Cost	Total Cost
	Sprnkt, 6x4, 2,000 Gal	1.0 ea						900		900.00	900
	Crn, Rgh Trn, 41 - 50Tn, SwCb	1.0 ea						6,000		6000.00	6,000
	Welder	2.0 ea						1,500		750.00	1,500
	Tugger, 2,000 - 2,500 lb	1.0 ea						870		870.00	870
	subtotal z1 HEAVY EQUIP			0	0	0	0	35,070	0		35,070
	Z1 TAGGED EQUIP										
	Air Hoist(Tugger)1000#	1.0 ea						750		750.00	750
	AirEqp, jkhr, to 70# paving blr	1.0 ea						200		200.00	200
	CmptEq, Tamper, 175lb,	1.0 ea						1,200		1200.00	1,200
	Cncte bucket, laydown, 1 C.Y.	1.0 ea						240		240.00	240
	Cncte mtrzd, buggy/walk - behnd	1.0 ea						1,365		1365.00	1,365
	Bndr, hydr, cndt/pipe, to 2'	1.0 ea						585		585.00	585
	subtotal z1 TAGGED EQUIP			0	0	0	0	4,340	0		4,340
	Construction Facilities										
	Mobilization	1.0 WKS.			192.00	192	2,876	243		3119.00	3,119
	Admin Time (Employee proc. etc.)	13.0 WKS.			9.00	117	2,442			187.85	2,442
	General Cleanup	13.0 WKS.			16.00	208	3,109	788		299.77	3,897
	Drinking Water	13.0 WKS.			8.00	104	1,741	1,438		244.54	3,179
	Hauling	13.0 WKS.			24.00	312	5,223	2,365		563.69	7,588
	Small Tool Dispense & Repair	5,488.0 str						3,732		0.68	3,732
	Portable Toilet Service	13.0 WKS						244		18.77	244
	Consumables & Expendables	5,488.0 cetr						4,478		0.82	4,478
	Demobilization	1.0 WKS.			64.00	64	927	121		1048.00	1,048
	subtotal Construction Facilities			0	997	16,318	13,165	244			29,727

94336 (file 94336A1)

TVA - FHP FHE ESTIMATING

Phase II Approval

rept:n195

**KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND
.ALT 1 - ONE PUMPS & ONE PIPELINE.**

31-Aug-94

01:24 PM

ATTACHMENT 1

Loc	Description	Quantity	Unit	Material \$\$	M-H/Unit	Man-Hours	Labor \$\$	Eqpt/Ohr \$\$	Subcont \$	Unit Cost	Total Cost
TOTAL DIRECT COST				170,921		5,252	101,558	61,417	244		334,140
	Non-Manual Labor	(Phase 2 = 6,000 + Phase 3 = 23,960)									
	Total Contingency	(Phase 2 = 6,000 + Phase 3 = 21,069)									
	Partner Expenses/Charges (84E)	(Fee = 9,470 + Insur = 9,470)									
TOTAL CONSTRUCTION											410,109
LESS Engineered Materials - (Indicated by > <)											131,000 <
TOTAL CONTRACT CONSTRUCTION											279,109
	F&H Engineering - Phase 1										21,580
	F&H Engineering - Phase 2										1,670
	F&H Engineering - Phase 3										12,000
	Plant Overhead Charges for Procurement & Handling of Capital Materials										44,641
	Project Manager's Contingency										
= TOTAL (PAB APPROVAL) COST =											490,000

**KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND
.ALT 2-TWO PUMPS & ONE PIPELINE.**

Loc	Description	Quantity	Unit	Material \$\$	M-H/Unit	Man-Hours	Labor \$\$	Eqpt/Ohr \$\$	Subcont \$\$	Unit Cost	Total Cost
A REMOVALS											
	Electrical Demolition	1.0	ls		24.00	24	580			580.00	580
	Remove Pump & Piping	1.0	ls		144.00	144	2,561			2,561.00	2,561
	Remove Pump House & Slab	1.0	ls		360.00	360	5,228			5,228.00	5,228
	Remove Pump Platform & Piping	1.0	ls		168.00	168	3,594			3,594.00	3,594
	subtotal A REMOVALS			0		696	11,963	0	0		11,963
COAL YARD SUMP											
	Excavate for sump	810.0	cy		0.32	256	4,373			5.40	4,373
	Backfill for sump	470.0	cy		0.27	128	2,187			4.65	2,187
	Backfill 1" crushed stone	340.0	C.Y.		3.443	40	652			12.04	4,095
	Formwork for slab & walls sump	1,792.0	sfca		3.665	358	6,327			5.58	9,992
	Reinforcing place walls, #3 #7	4.4	ton		10.67	47	1,020			722.73	3,180
	Pour concrete in place 3000psi	60.0	cy		3.900	160	2,610			108.50	6,510
	Welded shear conn 3/4"x4-3/16"	24.0	ea		24	18	394			17.42	418
	3"x3"x5/16 steel angle A36	10.0	lf		40	6	131			17.10	171
	St sl,wf,10'-45',w 14 x 26	50.0	lf		638	32	672			26.20	1,310
	Steel Plates 3/4"x1'-2"	6.0	ea		150	16	341			81.83	491
	1-1/2"x 3/16"Galv bar grating	125.0	sf		1,500	24	515			16.12	2,015
	4" PVC pipe sch 40	10.0	lf		40	4	94			13.40	134
	subtotal COAL YARD SUMP			15,560		1,089	19,316	0	0		34,376
DX PUMPING ASSY											
	::Polypropylene Sump 10' diax16'h	1.0	ea		18,000 <	80	1,696			19,696.00	19,696
	::36" Polypropylene Suction pipe	1.0	ls		12,109 <	144	3,362			15,471.00	15,471
	::6" Vert Cant 40hp pump w/mtr	2.0	ea		145,009 <	96	2,236			73,622.50	147,245
	::Level control system	1.0	ea		3,000 <	24	580			3,580.00	3,580
	subtotal DX PUMPING ASSY			178,118		344	7,874	0	0		185,992
EARTHFILL											

**KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND
ALT 2-TWO PUMPS & ONE PIPELINE.**

Loc	Description	Quantity	Unit	Material \$\$	M-H/Unit	Man-Hours	Labor \$\$	Eqpt/Othr \$\$	Subcont \$	Unit Cost	Total Cost
	Earth Fill & compaction	700.0	C.Y.		0.01	9	151			0.22	151
	Crushed Stone Pmp House Area	230.0	tn	2,070	0.20	46	819			12.56	2,889
	1"GRS conduit w/fts & spts	80.0	lf	165	0.40	32	758	19		11.78	942
	subtotal EARTHFILL			2,235		87	1,728	19	0		3,982
	PIPE TO ASHPOND										
	Temporary dike @ coal yd sump	1.0	ls	160.00		160	2,454	562		3016.00	3,016
	Backfill sand around 10" pipe	620.0	cy	3,382	0.08	48	743			6.65	4,125
	Excavate for 10" pipe trench	2,050.0	cy		0.11	219	3,639			1.78	3,639
	Backfill earth for 10" trench	1,430.0	cy		0.04	64	1,065			0.74	1,065
	::10" Polyethylene Pipe SDR 19	4,200.0	lf	> 18,270	< 0.28	1,176	27,454			10.89	45,724
	::10" Polyethylene Pipe fgs 90d	2.0	ea	> 339	< 4.50	9	216			277.50	555
	::10" Polyethylene Pipe fgs 45d	5.0	ea	> 385	< 4.50	23	540			185.00	925
	::10" Polyethylene Pipe flange	1.0	ea	> 97	< 4.50	5	108			205.00	205
	Rent polyethylene fusion welder	1.0	ls					8,250		8,250.00	8,250
	::10" Polyethylene Pipe fgs WYE	1.0	ea	> 291	< 6.00	6	144			435.00	435
	subtotal PIPE TO ASHPOND			22,764		1,710	36,363	8,812	0		67,939
	STNLS STL PIPE										
	Valve box 20"x14"x16"dp,plas	2.0	ea	400	16.00	32	776			588.00	1,176
	Valve box 20"x14"x6"dp,plas	2.0	ea	200	8.00	16	388			294.00	588
	10" SSteel 316 flange,150# SO	2.0	ea	1,400	6.00	12	289			844.50	1,689
	6" SSteel 316 flange,150# SO	2.0	ea	470	4.00	8	193			331.50	663
	10" SSteel 316 90deg sch 40	2.0	ea	750	9.00	18	434			592.00	1,184
	10" SSteel 316 45deg sch 40	4.0	ea	3,520	12.00	48	1,156			1,169.00	4,676
	10x6" SS 316 reducer sch 40	2.0	ea	1,200	12.00	24	578			889.00	1,778
	10" SSteel 316 pipe sch 40	20.0	lf	2,840	1.00	20	466			165.30	3,306
	1" SSteel 316 pipe sch 40	20.0	lf	140	0.40	8	193			16.65	333
	10"x1" socket 3000# 316 ss	2.0	ea	216	4.00	8	189			202.50	405
	1" socket 3000# 316ss 90deg	4.0	ea	200	4.00	16	378			144.50	578
	10"x1" threadlet 3000# 316 ss	2.0	ea	180	4.00	8	189			184.50	369
	1/2"plug hex head 316 ss	2.0	ea	30	1.00	2	47			38.50	77

**KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND
ALT 2-TWO PUMPS & ONE PIPELINE.**

Loc	Description	Quantity	Unit	Material \$\$	M-H/Unit	Man-Hours	Labour \$\$	Eqpt/Ohr \$\$	Subcont \$\$	Unit Cost	Total Cost
	12" pipe sleeves, A53 cs. coated	200.0	lf	9,600	1.00	200	4,817			72.09	14,417
	10" ss check valve 150# flngd	2.0	ea	12,600	24.00	48	1,164			6882.00	13,764
	1" ss gate valve 150# threaded	2.0	ea	12,600	2.50	5	118			6359.00	12,718
	subtotal STNLS STL PIPE			46,346		473	11,375	0	0		57,721
	Z0 ELECTRICAL										
	3/4" GRS conduit w/ftgs & spts	30.0	lf	52	0.72	22	517			19.20	576
	1 - 1/2" GRS conduit w/ftgs & spts	12.0	lf	35	0.80	10	230			22.17	266
	2" GRS conduit w/ftgs & spts	30.0	lf	116	0.50	15	359			15.97	479
	3/4" flexible conduit, sealite	5.0	lf	18	1.20	6	145			32.60	163
	1" flexible conduit, sealite	10.0	lf	45	0.90	9	218			26.30	263
	2" flexible conduit, sealite	5.0	lf	53	1.80	9	218			54.20	271
	#10 -3/c PXMJ 600v P & C cable	100.0	lf	79	0.04	4	87			1.66	166
	#12 -4/c PXMJ 600v P & C cable	40.0	lf	37	0.08	3	73			2.75	110
	#2/0 -s/c PXJ-600v P & C cable	120.0	lf	228	0.08	9	221			3.74	449
	Cable Terminations	62.0	ea	62	0.40	25	600			10.68	662
	Bare copper wire stranded #2	50.0	lf	39	0.30	15	363			8.04	402
	Grnd. cdwl. #2 wire motr frame	4.0	ea	40	2.00	8	196			59.00	236
	1" FD outlet box	1.0	ea	10	0.67	1	16			26.00	26
	Ground fault indicating, 15 amp	1.0	ea	40	1.00	1	24			64.00	64
	Cover plwthr proof nema 7-23	1.0	ea	19	1.00	1	24			43.00	43
	Safety hvy duty 600v Sp 60 a	1.0	ea	700	6.00	6	141			841.00	841
	subtotal z0 ELECTRICAL			1,573		144	3,432	12	0		5,017
	Z1 HEAVY EQUIP										
	AirComp. 551 - 600cfm	1.0	ea					4,500		4500.00	4,500
	Trac. Crawl. Hvy. D8, 270 - 300 hp	1.0	ea					5,250		5250.00	5,250
	Compct. SheepFt, Rex 3 - 50	1.0	ea					4,200		4200.00	4,200
	Bkhd. Ldr. 1 - 1/4CYx17'x18"	2.0	ea					2,700		1350.00	2,700
	TrkDmp. 4x2, Platform	1.0	ea					3,000		3000.00	3,000
	TrkDmp. 6x4, 12 - 14CY, OnRd	4.0	ea					5,400		1350.00	5,400
	Trk. Fuel, 4x2	1.0	ea					750		750.00	750

**KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND
.ALT 2-TWO PUMPS & ONE PIPELINE.**

Loc	Description	Quantity	Unit	Material \$\$	M-H/Unit	Man-Hours	Labor \$\$	Eqpt/Othr \$\$	Subcont \$	Unit Cost	Total Cost
	Sprnkt,6x4, 2,000 Gal	1.0 ea						900		900.00	900
	Crn,PghTrn,41-50Tn,SwCb	1.0 ea						6,000		6000.00	6,000
	Welder	2.0 ea						1,500		750.00	1,500
	Tugger, 2,000-2,500 lb	1.0 ea						870		870.00	870
	subtotal z1 HEAVY EQUIP			0		0	0	35,070	0		35,070
	z1 TAGGED EQUIP										
	Air Hoist(Tugger)1000 #	1.0 ea						750		750.00	750
	Air Eqp, Jkhr, to 70# paving bkr	1.0 ea						200		200.00	200
	CrmpEqp, Tamper, 175lb,	1.0 ea						1,200		1200.00	1,200
	Cncte bucket, laydown, 1 C.Y.	1.0 ea						240		240.00	240
	Cncte mtrzd, buggy, walk-behind	1.0 ea						1,365		1365.00	1,365
	Bndr, hydr, cndt/pipe, to 2"	1.0 ea						585		585.00	585
	subtotal z1 TAGGED EQUIP			0		0	0	4,340	0		4,340
	Construction Facilities										
	Mobilization	1.0 WKS.			192.00	192	2,876	243		3119.00	3,119
	Admin Time (Employee proc. etc.)	13.0 WKS.			9.00	117	2,442			187.85	2,442
	General Cleanup	13.0 WKS.			16.00	208	3,109	788		299.77	3,897
	Drinking Water	13.0 WKS.			8.00	104	1,741	1,438		244.54	3,179
	Hauling	13.0 WKS.			24.00	312	5,223	2,365		583.69	7,588
	Small Tool Dispense & Repair	5,538.0 sthr						3,766		0.68	3,766
	Portable Toilet Service	13.0 WKS							244	18.77	244
	Consumables & Expendables	5,538.0 celtr						4,427		0.80	4,427
	Demobilization	1.0 WKS.			64.00	64	927	121		1048.00	1,048
	subtotal Construction Facilities			0		997	16,318	13,148	244		29,710

94336 (file 94336A2)

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**KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND
ALT 2-TWO PUMPS & ONE PIPELINE.**

31-Aug-94

01:26 PM

ATTACHMENT 1

Loc	Description	Quantity Unit	Material \$\$	M-H/Unit	Man-Hours	Labor \$\$	Eqpt/Othr \$\$	Subcont \$\$	Unit Cost	Total Cost
TOTAL DIRECT COST			266,594		5,537	108,363	61,400	244		436,600
	Non-Manual Labor									31,300
	Total Contingency									34,500
	Partner Expenses/Charges (84E)									20,400
	(Phase 2 = 6,000 + Phase 3 = 25,300)									
	(Phase 2 = 10,500 + Phase 3 = 24,000)									
	(Fee = 10,200 + Insur = 10,200)									
TOTAL CONSTRUCTION										522,800
	LESS Engineered Materials - (Indicated by > <)									208,000 <
	(Phase 2 = 197,500 + 10,500 contingency)									
TOTAL CONTRACT CONSTRUCTION										314,800
	F&H Engineering - Phase 1									21,580
	F&H Engineering - Phase 2									1,670
	F&H Engineering - Phase 3									12,000
	Plant Overhead Charges for Procurement & Handling of Capital Materials									55,950
	Project Manager's Contingency									
== TOTAL (PAB APPROVAL) COST ==										614,000

**KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND
ALT 3-TWO PUMPS & TWO PIPELINE.**

Loc	Description	Quantity	Unit	Material \$\$	M-H/Unit	Man-Hours	Labor \$\$	Eqpt/Othr \$\$	Subcont \$\$	Unit Cost	Total Cost
A REMOVALS											
	Electrical Demolition	1.0	ls	24.00		24	580			580.00	580
	Remove Pump & Piping	1.0	ls	144.00		144	2,561			2,561.00	2,561
	Remove Pump House & Slab	1.0	ls	360.00		360	5,228			5,228.00	5,228
	Remove Pump Platform & Piping	1.0	ls	168.00		168	3,594			3,594.00	3,594
	subtotal A REMOVALS			0		696	11,963	0	0	0	11,963
COAL YARD SUMP											
	Excavate for sump	810.0	cy	0.32		256	4,373			5.40	4,373
	Backfill for sump	470.0	cy	0.27		128	2,187			4.65	2,187
	Backfill 1" crushed stone	340.0	C.Y.	3.443		40	652			12.04	4,095
	Formwork for slab & walls sump	1,792.0	sfca	3.665		358	6,327			5.58	9,992
	Reinforcing place walls, #3 #7	4.4	ton	2,160		47	1,020			722.73	3,180
	Pour concrete in place 3000psi	60.0	cy	3,900		160	2,610			108.50	6,510
	Welded shear conn 3/4"x4-3/16"	24.0	ea	24		18	394			17.42	418
	3"x3"x5/16 steel angle A36	10.0	lf	40		6	131			17.10	171
	Str st, wf, 10' - 45's, w 14 x 26	50.0	lf	638		32	672			26.20	1,310
	Steel Plates 3/4"x1'-2"	6.0	ea	150		16	341			81.83	491
	1 - 1/2" x 3/16" Galv bar grating	125.0	sf	1,500		24	515			16.12	2,015
	4" PVC pipe sch 40	10.0	lf	40		4	94			13.40	134
	subtotal COAL YARD SUMP			15,560		1,089	19,316	0	0	0	34,876
DX PUMPING ASSY											
	::Polypropylene Sump 10'diax16'h	1.0	ea	> 18,000	<	80	1,696			19696.00	19,696
	::36" Polypropylene Suction pipe	1.0	ls	> 12,109	<	144	3,362			15471.00	15,471
	::6" Vert Cant 40hp pump w/intr	2.0	ea	> 145,009	<	96	2,236			73622.50	147,245
	::Level control system	1.0	ea	> 3,000	<	24	580			3580.00	3,580
	subtotal DX PUMPING ASSY			178,118		344	7,874	0	0	0	185,992
EARTH FILL											

**KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND
.ALT 3-TWO PUMPS & TWO PIPELINE.**

Loc	Description	Quantity	Unit	Material \$\$	M-H/Unit	Man-Hours	Labor \$\$	Eqpt/Othr \$\$	Subcontr \$\$	Unit Cost	Total Cost
	Earth Fill & compaction	700.0	C.Y.		0.01	9	151			0.22	151
	Crushed Stone Pmp House Area	230.0	tn	2,070	0.20	46	819			12.56	2,889
	1"GRS conduit w/ftgs & spts	80.0	lf	165	0.40	32	758		19	11.78	942
	subtotal EARTHFILL			2,235		87	1,728		19	0	3,982
	STNLS STL PIPE										
	Valve box 20"x14"x16"dp,plas	2.0	ea	400	16.00	32	776			588.00	1,176
	Valve box 20"x14"x6"dp,plas	2.0	ea	200	8.00	16	388			294.00	588
	10" SSteel 316 flange,150# SO	2.0	ea	1,400	6.00	12	289			844.50	1,689
	6" SSteel 316 flange,150# SO	2.0	ea	470	4.00	8	193			331.50	663
	6" SSteel 316 90deg sch 40	2.0	ea	750	9.00	18	434			592.00	1,184
	10" SSteel 316 45deg sch 40	4.0	ea	3,520	12.00	48	1,156			1,169.00	4,676
	10x6" SS 316 reducer sch 40	2.0	ea	1,200	12.00	24	578			889.00	1,778
	10" SSteel 316 pipe sch 40	20.0	lf	2,840	1.00	20	466			165.30	3,306
	1" SSteel 316 pipe sch 40	20.0	lf	140	0.40	8	193			16.65	333
	10"x1" socket 3000# 316 ss	2.0	ea	216	4.00	8	189			202.50	405
	1" socket 3000# 316ss 90deg	4.0	ea	200	4.00	16	378			144.50	578
	10"x1" threadolet 3000# 316 ss	2.0	ea	180	4.00	8	189			184.50	369
	1/2" plug hex head 316 ss	2.0	ea	30	1.00	2	47			38.50	77
	12" pipe sleeves,A53 cs,coated	200.0	lf	9,600	1.00	200	4,817			72.09	14,417
	10" ss check valve 150# flngd	2.0	ea	12,600	24.00	48	1,164			6882.00	13,764
	1" ss gate valve 150#,fthreaded	2.0	ea	12,600	2.50	5	118			6359.00	12,718
	subtotal STNLS STL PIPE			46,346		473	11,375		0	0	57,721
	SUMP - ASH POND										
	Temporary dike @ coal yd sump	1.0	ls		160.00	160	2,454		562	3016.00	3,016
	Backfill sand around 10" pipe	620.0	cy	3,382	0.08	48	743			6.65	4,125
	Excavate for 10" pipe trench	2,050.0	cy		0.11	219	3,639			1.78	3,639
	Backfill earth for 10" trench	1,430.0	cy		0.04	64	1,065			0.74	1,065
	:::10" Polyethylene Pipe SDR 19	8,400.0	lf	>	36,540 <	0.28	2,352		54,907	10.89	91,447
	:::10" Polyethylene Pipe ftgs 90d	4.0	ea	>	678 <	4.50	18		432	277.50	1,110
	:::10" Polyethylene Pipe ftgs 45d	10.0	ea	>	770 <	4.50	45		1,079	184.90	1,849

94336 (file 94336A3)
 TVA - FHP FHE ESTIMATING
 Phase II Approval
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**KINGSTON FOSSIL PLANT
 COAL YARD RUNOFF POND
 .ALT 3-TWO PUMPS & TWO PIPELINE.**

31-Aug-94
 01:29 PM
 ATTACHMENT 1

Loc	Description	Quantity	Unit	Material \$\$	M-H/Unit	Man-Hours	Labor \$\$	Eqpt/Othr \$\$	Subcontf \$\$	Unit Cost	Total Cost
	10" Polyethylene Pipe flange	2.0 ea	>	194 <	4.50	9	216			205.00	410
	Rent polyethylene fusion welder	1.0 ls						8,250		8250.00	8,250
	subtotal SUMP - ASH POND			41,564		2,915	64,535	8,812	0		114,911
	Z0 ELECTRICAL										
	3/4"GRS conduit w/ftgs & spts	30.0 lf		52	0.72	22	517	7		19.20	576
	1-1/2"GRSconduit w/ftgs & spts	12.0 lf		35	0.80	10	230	1		22.17	266
	2" GRS conduit w/ftgs & spts	30.0 lf		116	0.50	15	359	4		15.97	479
	3/4"flexible conduit, sealite	5.0 lf		18	1.20	6	145			32.60	163
	1" flexible conduit, sealite	10.0 lf		45	0.90	9	218			26.30	263
	2" flexible conduit, sealite	5.0 lf		53	1.80	9	218			54.20	271
	#10 -3/c PXMJ 600v P & C cable	100.0 lf		79	0.04	4	87			1.66	166
	#12 -4/c PXMJ 600v P & C cable	40.0 lf		37	0.08	3	73			2.75	110
	#2/0 -s/c PXJ-600v P & C cable	120.0 lf		228	0.08	9	221			3.74	449
	Cable Terminations	62.0 ea		62	0.40	25	600			10.68	662
	Bare copper wire stranded #2	50.0 lf		39	0.30	15	363			8.04	402
	Grnd.cdwl,#2 wire mob frame	4.0 ea		40	2.00	8	196			59.00	236
	1" FD outlet box	1.0 ea		10	0.67	1	16			26.00	26
	Ground fault indicating,15 amp	1.0 ea		40	1.00	1	24			64.00	64
	Cover plwthr proof nema 7-23	1.0 ea		19	1.00	1	24			43.00	43
	Safety hvv duty 600v 3p 60 a	1.0 ea		700	6.00	6	141			841.00	841
	subtotal Z0 ELECTRICAL			1,573		144	3,432	12	0		5,017
	Z1 HEAVY EQUIP										
	AirComp. 551-600cfm	1.0 ea						4,500		4500.00	4,500
	Trac.Crawl.Hvy.DB.270-300 hp	1.0 ea						5,250		5250.00	5,250
	CompctSheepFt.Rex 3-50	1.0 ea						4,200		4200.00	4,200
	Bkholr. 1-1/4CYx17'x18"	2.0 ea						2,700		1350.00	2,700
	TrkDmp. 4x2, Platform	1.0 ea						3,000		3000.00	3,000
	TrkDmp.6x4,12-14CY, OnRd	4.0 ea						5,400		1350.00	5,400
	Trk. Fuel, 4x2	1.0 ea						750		750.00	750
	Sprnkt.6x4, 2,000 Gal	1.0 ea						900		900.00	900

94336 (file 94336A3)

TVA - FHP FHE ESTIMATING

Phase II Approval
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KINGSTON FOSSIL PLANT

COAL YARD RUNOFF POND

.ALT 3-TWO PUMPS & TWO PIPELINE.

31 - Aug - 94

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ATTACHMENT 1

Loc	Description	Quantity	Unit	Material \$\$	M-H/Unit	Man-Hours	Labor \$\$	Eqpt/Othr \$\$	Subcont \$\$	Unit Cost	Total Cost
	Crn,RghTrn.41-50Tn,SwCb	1.0 ea					6,000			6000.00	6,000
	Welder	2.0 ea					1,500			750.00	1,500
	Tugger, 2,000-2,500 lb	1.0 ea					870			870.00	870
	subtotal z1 HEAVY EQUIP			0		0	35,070	0	0		35,070
	z1 TAGGED EQUIP										
	Air Hoist(Tugger)1000#	1.0 ea					750			750.00	750
	Air Exp. Jkhr. to 70# paving bkr	1.0 ea					200			200.00	200
	CmptEqp. Tamper, 175lb,	1.0 ea					1,200			1200.00	1,200
	Cncte bucketlaydown, 1 C.Y.	1.0 ea					240			240.00	240
	Cncte. mtrzl. buggy, walk - behnd	1.0 ea					1,365			1365.00	1,365
	Bndr. hydr. cndt/pipe, to 2"	1.0 ea					585			585.00	585
	subtotal z1 TAGGED EQUIP			0		0	4,340	0	0		4,340
	Construction Facilities										
	Mobilization	1.0 WKS.		192.00		192	2,876	243		3119.00	3,119
	Admin Time (Employee proc. etc.)	13.0 WKS.		9.00		117	2,442			187.85	2,442
	General Cleanup	13.0 WKS.		16.00		208	3,109	788		299.77	3,897
	Drinking Water	13.0 WKS.		8.00		104	1,741	1,438		244.54	3,179
	Hauling	13.0 WKS.		24.00		312	5,223	2,365		583.69	7,588
	Small Tool Dispense & Repair	6,742.0 str						4,585		0.68	4,585
	Portable Toilet Service	13.0 WKS						244		18.77	244
	Consumables & Expendables	6,742.0 cefr						5,435		0.81	5,435
	Demobilization	1.0 WKS.		64.00		64	927	121		1048.00	1,048
	subtotal Construction Facilities			0		997	16,318	14,975	244		31,537

94336 (file 94336A3)

TVA - FHP FHE ESTIMATING

Phase II Approval
rept:n95

**KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND
.ALT 3 - TWO PUMPS & TWO PIPELINE.**

31 - Aug - 94

01:29 PM

ATTACHMENT 1

Loc	Description	Quantity	Unit	Material \$\$	M - H/Unit	Man - Hours	Labor \$\$	Eqpt/Ohr \$\$	Subcont \$	Unit Cost	Total Cost
TOTAL DIRECT COST				285,394		6,743	136,536	63,226	244		485,400
	Non-Manual Labor	(Phase 2 = 6,000 + Phase 3 = 30,900)									
	Total Contingency	(Phase 2 = 10,700 + Phase 3 = 27,000)									
	Partner Expenses/Charges (84E)	(Fee = 13,000 + Insur = 13,000)									
TOTAL CONSTRUCTION											586,000
	LESS Engineered Materials - (Indicated by ><)										227,000 <
TOTAL CONTRACT CONSTRUCTION											359,000
	F&H Engineering - Phase 1										21,580
	F&H Engineering - Phase 2										1,670
	F&H Engineering - Phase 3										12,000
	Plant Overhead Charges for Procurement & Handling of Capital Materials										61,750
	Project Manager's Contingency										61,750
== TOTAL (PAB APPROVAL) COST ==											663,000

KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND
SCOPE OF WORK

PROJECT DESCRIPTION

This project is for the cost to replace the existing coal yard runoff pond pumps, piping and remove the existing pumphouse and platform. Three alternate pump and pipeline configurations were estimated: Alternate 1 - One pump and one discharge pipeline to ash pond; Alternate 2 - two pumps and one discharge pipeline to ash pond; Alternate 3 - Two pumps and two discharge pipelines to ash pond. No phase I cost is included in estimate.

CIVIL SITE

Earthfill in low areas and place crushed stone surface on roadway where required.

Provide for grading of new areas, including area and roadway around pumphouse.

Perform a field survey in the area to obtain recent topographical data.

Remove the existing pumphouse and piping platform.

STRUCTURAL

Provide design calculations and a drawing for a concrete enclosure and base slab in the ground for the polyethylene tank support. The tank is for the coal yard drainage sump.

Provide design calculations and a drawing for the pump support and access platform.

MECHANICAL

Provide a new sump and pumping unit complete with control panel. The pump will be rated at 1500 gpm at 65 feet head. Pump material will be stainless steel. The sump and sump suction piping will be acid resistant polyethylene.

Provide the level control system complete with a beacon strobe light at the high level alarm. Alarm will only be local.

Provide a discharge polyethylene pipe line (see the alternates 1, 2 & 3 listed above). The discharge piping will terminate at the ash pond drainage ditch.

Provide specifications and contract administration for procurement of pumps, sump tank and sump suction piping.

KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND
SCOPE OF WORK

Prepare pump head calculations based on a land survey to be conducted during phase 2.

Prepare new CAD drawings.

ELECTRICAL

The pumps will be powered from the 480v Feeder Board in Hopper Building 2, as the existing sump pumps.

Provide a new underground conduit and cable from shed to new pumps.

Splice onto existing power and control cables at the shed that houses the existing coal yard runoff pond sump pump motors.

Install one disconnect switch for new pumps.

Install one 120v GFI receptacle with weatherproof cover at new pump area.

ASSUMPTIONS

No change in horse power for the sump pumps motors (one of which will be a backup pump), currently assumed to be 40hp each.

No detail routing drawing of the 10 inch polyethylene pipe from sump to ash pond will be provided. Routing will be by field.

EXCLUSIONS AND/OR CONSTRAINTS

The disposal of the old pump, pumphouse and electrical will be in full compliance of the TVA and the state of Tennessee regulations.

MATERIALS

Primary Price Quotes:

10" polyethylene piping, fittings and rental of fusion machine -
Fluid Controls, Inc.

36" polypropylene suction pipe - Irrigation Supply Co., Inc.

6" Vertical cantilever sump pump - Nagle Pumps, Inc.

10' dia x 16' tall; black polypropylene sump - Plastico of Memphis

10" stainless steel valve, telephone quote - Piping Supply of
Chattanooga.

KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND
SCOPE OF WORK

SCHEDULE NOTES

Work to be performed during outage schedule: YES___ No x

Work Schedule/Overtime:

x Other work schedule: 8-hr/day, 5 days/week, with causal overtime

All costs are escalated as appropriate unless otherwise noted.

Material - 3%
Labor - 3.4%
Equipment - 5%

REFERENCES

Information provided by:

Civil Site Engineering
Mechanical Auxiliaries Engineering
Electrical Engineering

ESTIMATE PREPARED BY

Larry Kesterson, 2663-C